

G. ornatus to be due to errors on the part of the describer and artist, the two forms must be regarded as distinct on the available evidence as to the constancy of the distinguishing characters relied upon.

Since the synonymies of the three species above discussed are somewhat complicated, it may simplify matters to restate them briefly :—

1. *Mungotictis lineatus*, nom. nov.

Galidictis vittatus, Gray, P. Z. S. 1848, p. 22.

Mungotictis vittatus, Pocock, Ann. & Mag. Nat. Hist. (8) xvi. p. 121, pl. vii. fig. 3 (1915).

Nec *Galidictis vittatus*, Schinz, Syst. Verz. Säug. i. p. 360 (1844).

2. *Galidictis vittatus*, Schinz, Syst. Verz. Säug. i. p. 360 (1844).

Galidictis striata, Is. Geoffroy, Mag. de Zool. 2nd ser. i. pp. 32-33, pl. xviii. (1839).

Nec *Viverra striata*, Desm. 1820 (= *Galidictis fasciatus*, Gmel., 1788).

Described by Geoffroy as having five wide black bands and two smaller ones on the body, thus suggesting the presence of a broad median spinal stripe. The figure shows a median dorsal stripe and four on the side, one of them short.

3. *Galidictis ornatus*, Pocock, Ann. & Mag. Nat. Hist. (8) xvi. p. 118, pl. vii. fig. 2 (1915).

With four black stripes on each side and no median dorsal stripe.

LXIII.—On the African Shrews belonging to the Genus *Crocidura*.—VI. By GUY DOLLMAN.

[Continued from p. 380.]

Group 17 (*hildegardeæ*).

Size small. Colour above reddish or dark brown. Skulls rather flat. Second and third upper unicuspid about equal in size.

(94) *Crocidura maanjæ*, Hell.

Crocidura maanjæ, Heller, Smith. Misc. Coll. vol. lvi. no. 15, p. 4 (1910).

Allied to *hildegardeæ*, but distinguished by its darker colour, narrower skull, and rather heavier teeth.

General proportions much as in *hildegardeæ*.

Colour of dorsal surface seal-brown, merging gradually on the sides into the greyer underparts. In the Museum Collection there is a specimen from Toro which may be accepted as representing this species; the new unbleached fur is dark seal-brown as described by Heller—patches of the old worn coat, still retained by this individual, are much redder in tint, about as in "Prout's brown." Backs of hands and feet dark brownish. Tail dark sepia-brown, a trifle paler below; caudal bristle-hairs numerous.

Skull rather narrower than that of *hildegardæ*, the Toro specimen with rather a higher brain-case than in the Fort Hall species, in shape more as in *jacksoni*. Teeth rather heavier, second upper unicuspid a trifle smaller than third.

Dimensions of the type (as given by Heller):—

Head and body 82 mm.; tail 52; hind foot 12·5 (measured dry).

Skull: greatest breadth 3·7; length of tooth-row 8·5.

Skull-dimensions of Toro specimen: condylo-incisive length 18·7; greatest breadth 8; least interorbital breadth 4; length of palate 7·6; postpalatal length 8·5; greatest maxillary breadth 6; length of upper tooth-row 8·1.

Hab. Kabula Muliro.

Type. Adult male. U.S. Nat. Mus. no. 164639.

(95) *Crocidura hildegardæ*, Thos.

Crocidura hildegardæ, Thomas, Ann. & Mag. Nat. Hist. (7) vol. xiv. p. 240 (1904).

Size rather smaller than in *jacksoni*, about as in *gracilipes*, skull with flat brain-case and the second and third upper unicuspids about equal in size.

Hind foot small, about 12·5 mm. in length.

Colour above dull cinnamon-brown very finely speckled with buff, general effect as in "mummy-brown" mixed with "Prout's brown," very different from the dull brown and silver-grey mottling of *jacksoni*, and considerably brighter than in *gracilipes*. Flanks rather greyer than back, the brown tint, in the new pelage, merging rather abruptly into the lighter grey of the belly; in the more worn pelage, where the ventral surface is rather browner, the differentiation between the two areas is less distinct. Belly greyish. Lateral glands small, as in *gracilipes*. Backs of hands and feet dirty white or brownish. Tail slender and cylindrical, very finely haired, considerably more naked in appearance than in *jacksoni*, more as in *gracilipes*, upper surface brown,

rather paler below ; bristle-hairs grey or light brown, very inconspicuous.

Skull rather smaller than in *jacksoni*, with smaller and much flatter brain-case ; muzzle and maxillary region considerably narrower. Teeth smaller, second and third upper unicusps about equal in size, heart-shaped in section, the third slightly overlapping the internal posterior angle of the second. Compared with *gracilipes* the skull is smaller and flatter, with smaller teeth.

Dimensions of the type (measured from dry skin) :—

Head and body 78 mm. (stretched) ; tail 50 ; hind foot 12·5.

Skull of type and ♀ from Elgon : condylo-incisive length 19·6, 19·4 ; greatest breadth 9, 8·7 ; least interorbital breadth 4·3, 4·3 ; length of palate 8·3, 7·8 ; postpalatal length 9, 9 ; greatest maxillary breadth 5·9, 6 ; median depth of brain-case 4·6, 4·8 ; length of upper tooth-row 8·2, 8.

Dimensions of two topotypes (preserved in spirit) and two specimens from Mt. Elgon (measured in the flesh) :—

		Head and body.	Tail.	Hind foot.
		mm.	mm.	mm.
♂.	Fort Hall	62	47	12·7
♀.	" "	61	47	12·4
♂.	Mt. Elgon	70	—	12
♀.	" "	67	45	12

Hab. Fort Hall, Kenia District, British East Africa.

Type. Adult female. B.M. no. 3. 3. 2. 7.

The small series of skins in the collection shows that there is a certain amount of colour-change due to bleaching, the new pelage being rather darker and browner than the old worn fur.

Externally this shrew is distinguished from *jacksoni* by its brighter, more cinnamon-coloured coat, slender, almost hairless tail, and its lighter underparts. From *gracilipes* it may be distinguished by its rather smaller and flatter skull and smaller teeth.

(96) *Crocidura hildegardeæ procera*, Hell.

Crocidura hildegardeæ procera, Heller, Smith. Misc. Coll. vol. ix. no. 12, p. 10 (1912).

Size of body much as in *hildegardeæ*, with lighter grey

underparts more distinctly marked off from the brownish tint of the dorsal surface.

Heller describes the coloration as follows:—"Dorsal colour broccoli-brown, the colour uniform to lower sides, where it is fairly well defined against the light grey underparts; hair everywhere plumbeous at base; feet white; ears drab; tail indistinctly bicolor, broccoli-brown above, drab-grey below." In the Museum Collection is a specimen from Baringo which undoubtedly represents this race. The colour of this individual is rather brighter than in true *hildegardæ*, the dorsal surface being rather more cinnamon, near "snuff-brown" speckled with "neutral grey." The cold light grey belly is considerably more sharply differentiated from the brown dorsal surface than in the Fort Hall form. Backs of hands and feet dirty white. Tail rather paler below than in *hildegardæ*, but not nearly as light as in the Uganda race.

Skull a trifle larger, with rather larger teeth, but of the same flattened type; in the Baringo specimen the brain-case is rather broader than in *hildegardæ*.

Dimensions of the type (as given by Heller):—

Head and body 72 mm.; tail 51; hind foot 12.

Skull: condylo-incisive length 20; greatest breadth 9; length of upper tooth-row 8.8.

Skull-dimensions of a female from Baringo:—

Condylo-incisive length 20.5 mm.; greatest breadth 9.5; least interorbital breadth 4.2; length of palate 8.4; post-palatal length 9.8; greatest maxillary breadth 6.5; median depth of brain-case 4.8; length of upper tooth-row 8.4.

Hab. Mt. Lololokui, Northern Guaso Nyiro District, British East Africa. Altitude 6000 feet.

Type. Adult female. U.S. Nat. Mus. no. 181820.

The rather lighter coloration, more distinctly differentiated ventral and dorsal surfaces, and rather larger teeth separate this race from *hildegardæ*. The lighter colour, less bicolored tail, and rather larger skull separate it from the Uganda race described below.

(97) *Crocidura hildegardæ rubecula*, subsp. n.

Very like true *hildegardæ*, but with lighter underparts and more hairy and more distinctly bicolor tail.

General colour of dorsal surface of new pelage dark brown (between "mummy-brown" and "sepia"); in the

bleached condition the coat is dull cinnamon-brown. Ventral surface distinctly lighter, more silvery. Hands and feet as in the Fort Hall form. Tail more thickly haired and very much lighter below, ventral surface pure white.

Skull and teeth as in *hildegardæ*.

Dimensions of the type (measured in the flesh):—

Head and body 73 mm.; tail 45; hind foot 14·5; ear 9.

Skull: condylo-incisive length 19·1; greatest breadth 8·6; least interorbital breadth 4·3; length of palate 7·6; greatest maxillary breadth 6; median depth of brain-case 4·9; length of upper tooth-row 8·3.

Hab. Kigezi, S.W. Uganda. Altitude 6000 feet.

Type. Adult male. B.M. no. 11.12.3.54. Original number 2035. Collected on April 25th, 1911, by Mr. Robin Kemp.

The only other specimen of this form obtained by Mr. Kemp is immature, being rather greyer in colour, but possessing a very similarly coloured tail, the hairs on the ventral surface being pure white. From *procera* this Uganda race may be distinguished by its rather darker coloration, smaller skull and teeth, and the white underside of the tail. The lighter and more silvery underparts and pure white hairs on the ventral surface of the tail separate this form from true *hildegardæ*.

(98) *Crocidura hildegardæ altæ*, Hell.

Crocidura hildegardæ altæ, Heller, Smith. Misc. Coll. vol. lx. no. 12, p. 9 (1912).

Related to *hildegardæ*, but darker in colour and with longer tail.

Size of hind foot a trifle larger.

Colour of upper surface vandyke-brown, the brown tint merging imperceptibly on the flanks into the slightly lighter drab-coloured underparts. Backs of hands and feet drab. Tail long, uniform dark brown, only slightly lighter on underside basally.

Skull about equal in size to that of *hildegardæ*, teeth slightly larger.

Dimensions of the type (as given by Heller):—

Head and body 74 mm.; tail 62; hind foot 13·5.

Skull: condylo-incisive length 19·8; greatest breadth 9·2; length of upper tooth-row 8·7.

Hab. Mt. Gargues, British East Africa. Altitude 6000 feet.

Type. Adult male. U.S. Nat. Mus. no. 181819.

The longer tail and much darker dorsal and ventral surface readily separate this race from the allied forms.

(99) *Crocidura planiceps*, Heil.

Crocidura planiceps, Heller, Smith. Misc. Coll. vol. lvi. no. 15, p. 5 (1910).

Darker than *hildegardæ*, with smaller and flatter skull.

Size of body much as in *hildegardæ*. Fur short, hairs on back about 2.5 mm. in length. Colour "above uniform seal-brown, this colour carried well down on the sides, where it merges gradually into the lighter smoky grey of the underparts. Tail seal-brown like the upper parts. Feet somewhat lighter brown than the back. Lateral glands distinctly marked by an oblong patch of whitish hair." The hairs of the back are stated to be "uniform in colour to the roots," and on the under surface "showing a narrow basal band of plumbeous."

Skull with very flat brain-case, depressed anteriorly.

Dimensions of the type (as given by Heller) :—

Head and body 71 mm. ; tail 53 ; hind foot 12.3.

Skull : condylo-incisive length 18.3 ; greatest breadth 8 ; length of upper tooth-row 8.

Hab. Rhino Camp, Lado Enclave.

Type. Adult male. U.S. Nat. Mus. no. 164641.

The darker colour and smaller skull, with depressed brain-case, distinguish this species from *hildegardæ* and its allies.

(100) *Crocidura somalica*, Thos.

Crocidura somalica, Thomas, Ann. & Mag. Nat. Hist. (6) vol. xvi. p. 52 (1895).

Rather smaller than *hildegardæ*, with shorter tail.

Size of body small, hind foot rather shorter than in *hildegardæ*. Fur of medium length, hairs of back 4-5 mm. long.

Colour of back (from spirit-specimens) slate-grey washed with brown, passing gradually on the flanks into the dull greyish white of the ventral surface. Backs of hands and feet white. Tail shorter than in *hildegardæ* and rather thicker at its base, brown above, white below ; bristle-hairs

numerous, evenly distributed throughout nearly the whole length of the tail.

Skull about equal in length to that of the Fort Hall species, brain-case equally flat but narrower. Teeth similar, second and third upper unicuspid almost equal in size.

Dimensions of the type (in spirit):—

Head and body 53 mm. ; tail 40 ; hind foot 11·2.

Skull : condylo-incisive length 19·4 ; greatest breadth 8·6 ; least interorbital breadth 4 ; length of palate 7·8 ; post-palatal length 8·5 ; greatest maxillary breadth 5·8 ; median depth of brain-case 4·2 ; length of upper tooth-row 8·5.

Hab. Webi Shebeli, Somaliland.

Type. Adult female. B.M. no. 93. 6. 30. 7.

In addition to the type, there is in the Collection a male specimen, collected near the type-locality, which agrees very closely in general body- and skull-dimensions.

(101) *Crocidura crossei*, Thos.

Crocidura crossei, Thomas, Ann. & Mag. Nat. Hist. (6) vol. xvi. p. 53 (1895).

A member of the *hildegardeæ* group.

About equal in size to *somalica*, but with longer tail. Fur rather short, hairs of back 3–4 mm. in length.

Colour (from spirit-specimen) slaty grey tinged with brown, paler and greyer below. Lateral glands whitish. Backs of hands and feet dirty brownish buff ; digits rather paler, almost white. Tail long and fairly stout, finely haired, brownish grey above, dirty white below ; bristle-hairs numerous, evenly distributed throughout nearly the whole length.

Skull about equal in length to that of *somalica*, brain-case equally flat but narrower. Teeth a trifle smaller, upper unicuspid narrower.

Dimensions of the type (in spirit):—

Head and body 60 mm. ; tail 51 ; hind foot 12 ; ear 7·5.

Skull : condylo-incisive length 19·3 ; greatest breadth 8·2 ; least interorbital breadth 3·7 ; length of palate 8·1 ; post-palatal length 8·9 ; greatest maxillary breadth 5·6 ; median depth of brain-case 4·3 ; length of upper tooth-row 8·3.

Hab. Asaba, 150 miles up the Niger.

Type. Adult male. B.M. no. 95. 5. 3. 4.

Group 18 (*allex* and *alpina*).

Size very small. Colour above dark sepia or brownish red, below greyish buff. Fur normal in length. Second and third upper unicuspid about equal in size.

(102) *Crocidura allex*, Osg.

Crocidura allex, Osgood, Field Mus. Nat. Hist. Publication 143 (Zool. Ser.), vol. x. no. 3, p. 20 (1910).

Almost equal in size to *b. cunninghamei*, with shorter skull, higher brain-case, and slightly smaller teeth.

Fur much longer than in *bicolor* and its allies, more as in the *hildegardeæ* group. Colour of dorsal surface dull brown (near "sepia"), very much as in *j. amalæ*; flanks rather more strongly tinged with buff, the brown tint passing fairly abruptly into the greyish buff of the ventral surface. Backs of hands and feet greyish or greyish buff. Tail slender and finely haired, almost naked in general appearance; dark brown above, rather lighter below. Caudal bristle-hairs normal.

Skull a trifle shorter than in *cunninghamei*, with a higher brain-case, more as in *bottegi*, but larger and with larger teeth; second and third upper unicuspid about equal in size, but overlapping.

Dimensions of the type (as given by Osgood):—

Head and body 64 mm.; tail 45; hind foot 12.

Skull: condylo-incisive length 17·1; greatest breadth 7·7; postpalatal length 7·9; greatest maxillary breadth 5·2; length of upper tooth-row 7·15.

Hab. Naivasha, British East Africa.

Type. Adult male. Field Mus. Nat. Hist. no. 16820.

In the Museum Collection there is a single specimen from near Lake Olbollossat, collected and presented by A. Blayney Percival, Esq., which agrees fairly closely with Osgood's description; the flesh-dimensions of this individual are given as:—Head and body 55 mm.; tail 38; hind foot 11; ear 7.

From its near neighbour, *bicolor cunninghamei*, this Naivasha species is distinguished externally by its much longer fur and browner colour; the skulls are very distinct, that of *allex* being very much higher and with a more rounded brain-case. The following species, *alpina*, from

Mt. Kenia, is considerably brighter in colour and possesses a slightly flatter skull, with the second upper unicuspid smaller in size.

(103) *Crocidura alpina*, Hell.

Crocidura alpina, Heller, Smith. Misc. Coll. vol. lvi. no. 9, p. 5 (1910).

Closely allied to *allex*, from Naivasha, but with flatter skull and the second upper unicuspid rather smaller.

General dimensions much as in *allex*.

Colour of upper parts, in the new unbleached pelage, yellowish brown, near "Prout's brown," gradually changing on the flanks to the buffy grey of the ventral surface. In the old bleached coat the colour is very much more orange. Underparts grey washed with pinkish buff. Backs of hands and feet pale brownish. Tail covered with very short fine hairs, dark brownish above, paler below, but not sharply bicoloured; bristle-hairs not very numerous or conspicuous.

Skull shorter and flatter than in *allex*, but not as flat as in the *bicolor* group; second upper unicuspid relatively smaller.

Dimensions of the type (as given by Heller):—

Head and body 65 mm.; tail 39; hind foot 11.

Skull: condylo-incisive length 16.2; greatest breadth 7.5; depth of skull at bullæ 4.6; length of upper tooth-row 7.

In the Museum Collection there is a specimen from Solai, Kenya (8000 feet), which undoubtedly represents this species; the flesh dimensions are given as:—Head and body 63 mm.; tail 41; hind foot 11; ear 8.

Hab. West slope of Mt. Kenya, British East Africa. Altitude 10,000 feet.

Type. Adult female. U.S. Nat. Mus. no. 163089.

The brighter colouring, rather smaller and flatter skull, and smaller size of the second upper unicuspid distinguish this Kenya shrew from the Naivasha *allex*. The members of the *bicolor* group are at once distinguished from *alpina* by their shorter fur, flatter skulls, and much greyer colour.

[To be continued.]